

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1-15. (Canceled)

16. (Previously Presented) A process for forming an insulating film on the surface of a substrate for an electronic device, comprising the steps of:

cleaning the substrate with plasma based on a cleaning gas comprising a rare gas;

oxidizing the substrate with plasma based on an oxidizing gas comprising a rare gas and oxygen, to thereby form an oxide film thereon;

nitriding the oxide film with plasma based on a nitriding gas comprising a rare gas and nitrogen after the oxidizing; and

treating the oxide film with plasma based on a treating gas comprising hydrogen gas after the nitriding;

wherein the cleaning and oxidizing are conducted under the same operation principle; and

the cleaning and oxidizing are conducted in the same vessel without exposure of the substrate to air.

17. (Previously Presented) A process for forming an insulating film according to claim 16, wherein the cleaning gas comprises hydrogen gas.

18. (Previously Presented) A process for forming an insulating film according to claim 16, wherein the cleaning is conducted at a pressure of 7-133 Pa.

19-22. (Canceled)

23. (Previously Presented) A process for forming an insulating film according to claim 16, which further comprises forming a High-k film after the treating.

24. (Canceled)

25. (Previously Presented) A process for forming an insulating film on the surface of a substrate for electronic device, comprising the steps of:

cleaning the substrate with plasma based on a cleaning gas comprising a rare gas;

nitriding the substrate with plasma based on a nitriding gas comprising a rare gas and nitrogen, to thereby form a nitride film thereon;

oxidizing the nitride film with plasma based on an oxidizing gas comprising a rare gas and oxygen after the nitriding; and

treating the nitride film with plasma based on a treating gas comprising hydrogen gas after the oxidizing;

wherein cleaning and nitriding are conducted under the same operation principle; and

the cleaning and nitriding are conducted in the same vessel without exposure of the substrate to air.

26. (Previously Presented) A process for forming an insulating film according to claim 25, wherein the cleaning gas comprises hydrogen gas.

27. (Previously Presented) A process for forming an insulating film according to claim 25, wherein the cleaning is conducted at a pressure of 7-133 Pa.

28-31. (Canceled)

32. (Previously Presented) A process for forming an insulating film according to claim 25, which further comprises forming a High-k film after the treating.

33-41. (Canceled)

42. (Previously Presented) A process for forming an insulating film according to claim 16, wherein the nitriding and/or treating is conducted in a processing chamber that is the same as or different from the processing chamber wherein the cleaning and oxidizing are conducted.

43-44. (Canceled)

45. (Previously Presented) A process for forming an insulating film according to claim 25, wherein the oxidizing and/or treating is conducted in a processing chamber that is the same as or different from the processing chamber wherein the cleaning and nitriding are conducted.

46-53. (Canceled)

54. (Previously Presented) A process for forming an insulating film according to claim 16, wherein the plasma is generated using microwave irradiation by using a plane antenna member having a plurality of slots.

55. (Previously Presented) A process for forming an insulating film according to claim 25, wherein the plasma is generated using microwave irradiation by using a plane antenna member having a plurality of slots.

56. (Previously Presented) A process for forming an insulating film according to claim 23, wherein the High-k film comprises one material selected from the group consisting of Al_2O_3 , ZrO_2 , HfO_2 , Ta_2O_5 , ZrSiO , HfSiO and ZrAlO .

57. (Canceled)

58. (Previously Presented) A process for forming an insulating film according to claim 32, wherein the High-k film comprises one material selected from the group consisting of Al_2O_3 , ZrO_2 , HfO_2 , Ta_2O_5 , ZrSiO , HfSiO and ZrAlO .

59-63. (Canceled)

64. (Previously Presented) A process for forming an insulating film according to claim 16 wherein the insulating film is a gate insulator.

65. (Previously Presented) A process for forming an insulating film according to claim 25 wherein the insulating film is a gate insulator.

66-70. (Canceled)

71. (Previously Presented) A process for forming an insulating film according to claim 16 wherein the substrate is subjected to wet cleaning prior to the plasma cleaning.

72. (Previously Presented) A process for forming an insulating film according to claim 25 wherein the substrate is subjected to wet cleaning prior to the plasma cleaning.